

LOGISTICAL SUBSTANTIATION OF ZERO WASTE CONCEPT IMPLEMENTATION IN COUNTRYSIDE

Svetlana Tokareva

Odessa State Environmental University, Odessa, Ukraine

Now the urgency of optimization of movement of material streams and increasing interest to studying logistics are caused by potential opportunities of increase of efficiency of all economic systems which are opened with the use of logistical approach.

In the given work the logistical approach is applied to object which at the present stage of development of a society is not considered as goods or a product - to solid domestic waste (SDW). Nevertheless, this object demands not less attention of organizations, engaged in gathering, transportation and processing of waste. Mostly in our country collected SDW are transported by large-capacity lorries with greater consumption of fuel. It is especially important for them to choose such a route of transportation and filling, which could be carried out in as short time as possible, could provide the least run, hence, demanded for its performance the least amount of consumed fuel, i.e. reduced material inputs. Except of economical aspect this problem has still ecological one. Such optimization of movement of garbage trucks leads to decrease of motor transport influence on environment.

The purpose of the given work is definition of optimum routes of waste gathering and estimation of optimality of location of the enterprise for its processing.

The problem put by us was solved on an example of 18 settlements of Ovidiopol area of Odessa region which are included into zone of service of an enterprise planned to construction on processing SDW (namely sorting of fractions of secondary material resources and processing of easily decomposed organic part of waste with wormcultivation method).

Initial data for the decision of logistical problems on example of chosen settlements were the information on quantity of waste generated in them, received from local self-government institutions.

Considering positional relationship of the settlements we have determined optimal routes of sanitary cars moves during SDW collection. As results of calculations have shown, wastegathering from the whole area and their transportation them to one place is not rational as the garbage truck should gather waste from the same settlements for several times. Besides such settlements as Ovidopol and Velikodolinskoe are transport junctions, because of this a garbage truck, moving on a route, must pass repeatedly them with the filled body.

For liquidation of these lacks the researched of Ovidiopol area has been divided into 2 subdistricts. The opportunity of such division is caused by that in a southern subdistrict there is an object which can serve as point of waste gathering (an existing dump). For both subdistricts we had also define routes of movement. Lead logistical analysis has shown, that the developed variant of waste gathering is not more rational, than previous since the total of routes has increased up to 6 (in comparison with 5 at gathering from all researched territory).

For optimization of process of gathering and transportation of waste the decision to exclude from the southern subdistrict one settlement was accepted and to refer it to the northern. Under such conditions the quantity of routes is also equal 5, however their general extent is on 100 km less, than at a detour of not divided territory (275,1 km in comparison about 376,7 km). The organization of a place of waste gathering will make a product of SDW processing (compost and biohumus) accessible to inhabitants of the area. The optimum location of such point is as close as possible to a place of waste generation. It will provide also the least degree of decomposition of organic part of SDW by the moment of gathering and convenience for population.

Nevertheless, the last of examined variants of waste gathering in 18 settlements has a big lack. For realization of SDW transportation from settlements of the southern subdistrict on an existing dump

near Ovidiopol it is necessary to organize there the local enterprise of processing or, at least, sorting of waste. The secondary materials received at sorting, will find the consumer on the market and a line on composting of easily decomposing organic part is organized on the spot the made product will be demanded in nearby settlements that is caused by mainly agricultural orientation of activity of the population in the given part of area Ovidiopol'skogo.

Definition of the optimal location of a waste processing factory has shown, that removing of waste from the whole territory to one place (planned factory in area of Novaya Dolina) is the extremely irrational. At the same time, if dividing the territory into 2 subdistricts, the optimal locations of places of gathering of waste are close enough to Ovidiopol and the Novaya Dolina - the settlements which are planned as locations for organizing waste processing plants.

Thus, it is possible to track a regularity, that creation of powerful waste processing centers, serving large areas much less rationally, than organization of small enterprises on waste processing of local value.